

Amendments to the Claims

This listing of claims replaces all prior versions, and listings, of claims in the application.

Listing of Claims

1. (Currently amended) A device for the electrochemical detection of at least one type of a biochemical molecule contained in a liquid from a group of predetermined biochemical molecules of different types, comprising:

a means (1) for taking up the liquid, said means having at least one reference electrode (RE) and at least one counterelectrode (GE) and more than two working electrodes (AE1, AE2, AE3), with at least one working electrode (AE1, AE2, AE3) being provided for the detection of each type of a biochemical molecule, said working electrode being coated with a molecule that is complementary to the biochemical molecule to be detected, so that biochemical molecules of different types can be detected simultaneously,

~~a potentiostat (P) for generating a predetermined voltage profile which is variable during the measurement between the working electrodes (AE1, AE2, AE3) and the reference electrode (RE),~~

~~said potentiostat (P) having a third operational amplifier (OP3), to whose output the counterelectrode (GE) is connected and whose inverting input (OP3-) is connected via a second resistor (R2) to the output of the second operational amplifier (OP2) and is connected via a third resistor (R3) to a device for generating a selectable desired voltage, with the noninverting input (OP3+) of the third operational amplifier (OP3) being grounded,~~

a current/voltage converter (S1, S2, S3) being connected downstream of each of the working electrodes (AE1, AE2, AE3) and

having a first operational amplifier (OP1) and a first resistor (R1), the current/voltage converters (S1, S2, S3) holding all of the working electrodes (AE1, AE2, AE3) at the same potential, and

a means (~~S1, S2, S3~~, AD) for measuring the currents flowing through the working electrodes (AE1, AE2, AE3), and

a potentiostat (P) for generating a predetermined voltage profile which is variable during the measurement between the working electrodes (AE1, AE2, AE3) and the reference electrode (RE),

said potentiostat (P) comprising a second operational amplifier (OP2) and a second resistor (R2), and a third operational amplifier (OP3) and a third resistor (R3),

with the third operational amplifier (OP3), to whose output the counterelectrode (GE) is connected and whose inverting input (OP3-) is connected via the second resistor (R2) to the output of the second operational amplifier (OP2), being connected via the third resistor (R3) to a device for generating a selectable desired voltage, with the noninverting input (OP3+) of the third operational amplifier (OP3) being grounded.

2. (Previously presented) The device as claimed in claim 1, wherein a plurality of interconnected or capacitively coupled reference electrodes (RE) is provided.

3. (Previously presented) The device as claimed in claim 1, wherein a plurality of interconnected counterelectrodes (GE) is provided.

4. (Currently amended) The device as claimed in claim 1, wherein the measuring means ~~(AD)~~ has an analog-to-digital converter.

5. (Currently amended) The device as claimed in claim 1, wherein the current/voltage converter (S1, S2, S3) is a current follower having a the first operational amplifier (OP1), a noninverting input (OP1+) of the first operational amplifier (OP1) is grounded, and the inverting input (OP1-) thereof is connected via a the first resistor (R1) to the output of the first operational amplifier (OP1) and to the working electrode (AE1).

6. (Previously presented) The device as claimed in claim 5, wherein a capacitance is connected in parallel with the first resistor (R1).

7. (Previously presented) The device as claimed in claim 5, wherein first resistors (R1) of different magnitudes can be connected between the inverting input (OP1-) and the output of the first operational amplifier (OP1) for the purpose of setting the current measurement range.

8. (Previously presented) The device as claimed in claim 1, wherein the biochemical molecule to be detected is a nucleic acid and the complementary biochemical molecules are nucleic acids that are complementary to the nucleic acid to be detected.

9. (Previously presented) The device as claimed in claim 1, wherein the potentiostat (P) has a second operational amplifier (OP2), which is connected as a voltage follower and to whose noninverting input (OP2+) the reference electrode (RE) is connected.

10. (Canceled)

11. (Previously presented) The device as claimed in claim 1, wherein a capacitance is connected between the output of the third operational amplifier (OP3) and the inverting input (OP3-) thereof.

12. (Currently amended) A method for electrochemical detection of at least one type of a biochemical molecule contained in a liquid from a group of predetermined biochemical molecules of different types, comprising the steps of:

a) providing a means (1) for taking up the liquid, the means (1) having at least one counterelectrode (GE) and a reference electrode (RE) and more than two working electrodes (AE1, AE2, AE3), with at least one working electrode (AE1, AE2, AE3) being provided for the detection of each biochemical molecule, said working electrode being coated with a molecule that is complementary to the biochemical molecule to be detected, so that biochemical molecules of different types can be detected simultaneously,

b) bringing the liquid into contact with the working (AE1, AE2, AE3), counter- (GE) and reference electrodes (RE),

c) simultaneously applying a predetermined voltage profile which is variable during the measurement between the working electrodes (AE1, AE2, AE3) and the reference electrode (RE),

while regulating said voltage between the working electrodes (AE1, AE2, AE3) and the reference electrode (RE) with a potentiostat (P) for generating a predetermined voltage profile which is variable during the measurement between the working electrodes (AE1, AE2, AE3) and the reference electrode (RE), said

potentiostat (P) comprising a second operational amplifier (OP2)
and a second resistor (R2), and a third operational amplifier (OP3)
and a third resistor (R3), with the ~~having a~~ third operational
amplifier (OP3), to whose output the counterelectrode (GE) is
connected and whose inverting input (OP3-) is connected via a the
second resistor (R2) to ~~an~~ the output of a the second operational
amplifier (OP2), being and is connected via a the third resistor
(R3) to a device for generating a selectable desired voltage, with
a the noninverting input (OP3+) of the third operational amplifier
(OP3) being grounded, and

d) measuring the currents flowing through the working
electrodes (AE1, AE2, AE3), all of the working electrodes (AE1,
AE2, AE3) being held at the same potential during the measurement.

13. (Previously presented) The method as claimed in claim 12,
wherein the measurement is carried out in parallel or by means of
multiplexing.

14. (Canceled)